

REMARKS

By this Amendment, claims 1, 3, 4, 5, 8-13, 14, 17, and 18 are amended merely to clarify the recited subject matter, and a corrected drawing and amendments to the specification are submitted. Claims 2, 6, 7, 15, and 16 are canceled without prejudice or disclaimer. Claims 1, 3-5, 8-14, 17, and 18 are pending.

The Office Action objected to the drawings with respect to reference signs not included in Fig. 4c. Applicants have submitted herewith a replacement Fig. 4c (with Fig. 4b on the same sheet) that includes reference signs 496a-496c. The Office Action objected to the abstract of the disclosure in view of its length. Applicants have submitted a replacement Abstract. The Office Action objected to page 12, line 31 of the specification. Applicants have amended that portion of the specification. Accordingly, the objections should be withdrawn.

The Office Action rejected claims 1-7, 11, and 13-16 under 35 U.S.C. § 103(a) as being unpatentable over Antonio et al. (U.S. Patent No. 5,621,752; hereafter “Antonio”) in view of Popovic et al. (U.S. Patent No. 6,370,397; hereafter “Popovic”). The Office Action rejected claims 8, 9, 12, 17, and 18 under 35 U.S.C. § 103(a) as being unpatentable over Antonio in view of Popovic and further in view of El-Tarhuni et al. (U.S. Patent No. 6,201,828; hereafter “El-Tarhuni”). Applicants traverse the rejections because the cited prior art references, analyzed individually or in combination, fail to teach or suggest all the features recited in the rejected claims.

For example, the cited prior art fails to teach or suggest the claimed receiver including “at least one rake branch, ... wherein the calculation means are adapted to calculate a control signal for controlling the beam formers such that, if the correlation result calculated from the left or right side of the incoming direction is higher than the correlation result obtained from the calculated incoming direction, the first beam former is controlled to receive the signal from the left or right side of the incoming direction having the higher correlation result,” as recited in independent claim 1 and its dependent claims.

Similarly, the cited prior art fails to teach or suggest the claimed receiver including “at least one rake branch [that] includes ... calculation means whose inputs include the outputs of the plurality of correlators, the calculation means being adapted to calculate and transmit to the control means, on the basis of the outputs of the plurality of correlators,

information on how the code generator and the plurality of beam formers are to be controlled, wherein different beam formers and correlators in the at least one rake branch are respectively used for signals of branch I and Q,” as recited in independent claim 11.

Further, the cited prior art fails to teach or suggest the claimed receiver comprising “controlling the code generator and the beam formers by means of said monitoring, wherein the beam formers are at least in part controlled by calculating, inside each rake branch, a control signal for controlling the beam formers such that, if the correlation result calculated from the left or right side of the incoming direction is higher than the correlation result obtained from the calculated incoming direction, a first beam former is controlled to receive the signal from the left or right side of the incoming direction having the higher correlation result,” as recited in independent claim 13 and its dependent claims.

Antonio merely discloses a spread spectrum communication system in which signals received with several antenna beams (e.g., 3) are routed to a rake branch. The signal received with the middle beam is used for reception. The correlations of the signals received with the left and right beams are also measured. If one of these signals gives a better correlation result than the middle beam, reception is switched to the respective beam. Thus, Antonio merely teaches use of multiple beams and selection of the beam which provides the best results. In contrast, the claimed invention uses only one antenna beam whose direction is adjusted if necessary. (See, e.g., FIG. 5D.)

Additionally, Antonio discloses use of beam forming circuitry 224 that is separate from rake branches, as shown in Figs. 5A to 5D. Control and adjustment of beams occurs outside of the rake branches.

To the contrary, in the receiver of the claimed invention, the beam forming circuits are integrated in the rake branches, as seen in Figure 3 of the present application. There is no separate beam forming circuit, and control and adjustment of beams occurs separately inside each rake branch.

Moreover, the Office Action referred to Fig. 4 of Antonio in the rejection of claim 11. However, Fig. 4 merely illustrates the structure of a transmitter, not a receiver, and contains no disclosure or suggestion about beam forming and correlating performed in receivers. The specification of Antonio emphasizes that I- and Q- signals are processed together (col. 6, lines 48-60). In contrast, the claimed invention (see claim 11 and Fig. 4a) recites that different beam formers and correlators are used for signals of I- and Q- branches.

Popovic and El-Tarhuni fail to remedy the deficiencies of Antonio. Popovic merely discloses a search window delay tracking procedure for use in a multipath search processor of a CDMA radio receiver. El-Tarhuni merely discloses systems and methods for generating despreading codes with refined estimates of transmission delays in CDMA systems.

Therefore, the teachings of Antonio, Popovic, and El-Tarhuni, analyzed individually or in combination, fail to teach or suggest all the features recited in the rejected claims.

All objections and rejections having been addressed, Applicants request issuance of a notice of allowance indicating the allowability of all pending claims. If anything further is necessary to place the application in condition for allowance, Applicants request that the Examiner contact Applicants' undersigned representative at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
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